Compatibility Chart of CZR & CZR Press

<table>
<thead>
<tr>
<th>Framework for controlling coping color</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shade Base</td>
<td>CZR PRESS Shade Base Stain</td>
<td>1090°C</td>
<td></td>
</tr>
<tr>
<td>Body &amp; Enamel</td>
<td>CZR 930°C</td>
<td>CZR PRESS LF IS 800°C</td>
<td>CZR IS 900°C</td>
</tr>
<tr>
<td>Internal Stain</td>
<td>CZR PRESS LF IS 800°C</td>
<td>CZR IS 900°C</td>
<td>CZR PRESS L-Ingot 1045~1075°C</td>
</tr>
<tr>
<td>Translucent Luster</td>
<td>CZR PRESS LF IS 800°C</td>
<td>CZR IS 900°C</td>
<td>CZR PRESS H-Ingot 1045~1075°C</td>
</tr>
<tr>
<td>External Stain</td>
<td>CZR PRESS LF IS 800°C</td>
<td>CZR IS 900°C</td>
<td>CZR PRESS L-Ingot 1045~1075°C</td>
</tr>
<tr>
<td>Glaze</td>
<td>CZR PRESS LF IS 800°C</td>
<td>CZR IS 900°C</td>
<td>CZR PRESS L-Ingot 1045~1075°C</td>
</tr>
</tbody>
</table>

**Liquids for CZR & CZR Press**
- LF Liquid: CZR PRESS LF
- IS Liquid: CZR Internal Stain, CZR PRESS LF Internal Stain, CZR PRESS Glaze, CZR PRESS Shade Base Stain, CZR PRESS LF ES Glaze
- ES Liquid: CZR External Stain (incl. ES Glaze), CZR PRESS LF External Stain

No Framework
- Stand Alone: CZR with Nori-Vest Zr

Zirconia Framework
- KATANA / Nobel Procera Zirconia / Others (Pure Zirconia)
Excellent compatibility and bonding with all pure zirconia substructures.
Ideal stability with outstanding resistance to fractures and chipping.
Perfectly matched coefficient to pure zirconia substructures.
Ease of handling.

Natural-looking cervicals are easily achieved with CZR Margin Porcelain. Eliminating the high value at the margins.
CZR restorations layered to zirconia are indicated in both posterior and anterior regions due to high flexural strength and inherent fracture toughness.

Indicated for use in fabricating crowns and bridges in the anterior and posterior regions.
Consistent precise and predictable fit with superior marginal integrity.
Ideal for use with pure zirconia framework.

Natural opalescence and translucency for true-to-life restorations.
Provides an esthetically perfect balance of chorma and value.
Ideal stability with outstanding resistance to fractures and chipping.

CZR PRESS LF is indicated for layering CZR PRESS All-ceramic inlays, onlays, veneers and full crowns, as well as CZR PRESS-to-Zirconia crowns, bridges, inlay bridges and implant restorations.

CZR PRESS LF’s lower fusing temperature (840°C) affords greater stability with repeated firings when layering CZR All-ceramic and CZR PRESS-to-Zirconia restorations.

PROVEN ZIRCONIA SOLUTIONS
CZR KATANA Zirconia Crowns & Bridges - Reliable Fit. Exceptional Esthetics. Proven Results.

Nortake Dental Supply Co., Limited sponsored a study to evaluate and compare the clinical success of single posterior porcelain-fused-to-zirconia and porcelain-fused-to-metal crowns in private practice.

Survival Analysis of PFZ (with CZR) and PFM (with EX-3) Crowns

<table>
<thead>
<tr>
<th>Group</th>
<th>Total # Crowns</th>
<th>Mean Survival in Days</th>
<th>Probability of Survival in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFZ Total</td>
<td>1944</td>
<td>1583.6</td>
<td>98.1</td>
</tr>
<tr>
<td>PFM Total</td>
<td>691</td>
<td>1570.0</td>
<td>95.8</td>
</tr>
</tbody>
</table>

Twenty-two dentists and over two thousand patients participated.
The results of the study were presented at IADR 2010 Barcelona.
For complete details, visit www.nortake-dental.co.jp
CZR (Cerabien ZR) is a porcelain specifically developed for making all-ceramic crowns in use with zirconia frameworks. Crown and Bridge made from CZR with zirconia can be used in the posterior as well as anterior due to its extremely high flexural strength and excellent fracture toughness. The combination of CZR and zirconia will give you enhanced esthetics and fit with maximum strength for an overall superior restoration.

**Products**

<table>
<thead>
<tr>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Replication of the natural tooth shades</td>
</tr>
<tr>
<td>② Excellent compatibility and bonding with zirconia frameworks</td>
</tr>
<tr>
<td>③ Exceptional Easy of Use</td>
</tr>
<tr>
<td>④ Ideal stability with outstanding resistance to fractures and chipping</td>
</tr>
</tbody>
</table>

The thermal expansion of CZR is entirely different from those of other porcelains. Therefore, mixing or using with other porcelains is not recommended.

<table>
<thead>
<tr>
<th>Coefficient of Thermal Expansion (50—500°C/10⁴ K⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZR</td>
</tr>
<tr>
<td>Cerabien</td>
</tr>
<tr>
<td>Super Porcelain EX-3</td>
</tr>
</tbody>
</table>

### Working Procedures

#### Procedure A

Please proceed with **steps in case of using colored zirconia frameworks (Katana KT11~KT18) with high translucency.**

#### Procedure B

Please proceed with **White zirconia frameworks (KT10) covered with Shade Base Porcelain and/or Shade Base Stain (Refer to the instruction of EX-3 PRESS).**

#### Zirconia framework trimming

Checking the framework if it is suitable to the die form. Adjusting the finishing line and the thickness in the margin area with Noritake Meister Point SC-51 or SD-61, carefully trimming them by using a diamond point under running water. After trimming, please check if there are any cracks on the zirconia framework with Noritake Crack Finder.

#### Alumina sandblasting on zirconia framework surface

Create a matt-finish surface by sandblasting with 50 μm alumina sand under 29psi (<0.2MPa).

#### Cleaning the framework

Clean the framework ultrasonically in acetone solution for 5 minutes, to avoid contamination on the surface. After cleaning, please refrain from touching it with bare fingers.
4. **1st Opacous Body application**
   To increase the bonding strength between zirconia framework and CZR, apply a very thin layer of Opacous Body Porcelain mixed with Noritake Meister Liquid or Forming Liquid. For the 1st Opacous Body baking, please refer to the baking schedule, page 28.

5. **2nd Opacous Body application**
   Apply Opacous Body in about 0.3mm thickness with considering the mamelon structure. It is recommended to bake it without other porcelain at this stage. For the 2nd Opacous Body baking, please refer to the baking schedule, page 28.

6. **1st Shade Base application**
   To increase the bonding strength between zirconia framework and CZR, apply a very thin layer of Shade Base Porcelain mixed with Noritake Meister Liquid or Forming Liquid. Using an instrument is recommended to apply porcelain easily. For the 1st Shade Base baking, please refer to the baking schedule, page 28.

7. **2nd Shade Base Porcelain application**
   Apply 2nd Shade Base in about 0.2mm thickness. Repeat the same baking at the 1st Shade Base.

8. **Body / Cervical application**
   Apply Body and mixture Body and Cervical Porcelains at the neck. Please refer to page 31 for its mixture ratio. Match the dimension and form of the symmetric tooth in order to recreate the shape precisely.

9. **Cut Back**
   Cut Back one-third top of labial surface and the proximal area. After cut back, please make sure if the thickness of Body Porcelain should be necessarily at least 0.8mm.

10. **Enamel application**
    Apply Enamel on the incisal area. If necessary, Translucent and Luster Porcelains can be overlayed Enamel Porcelain. Layering excess Enamel Porcelain causes the whiter shade than expected. Therefore please pay attention to layering thickness.

11. **Body / Enamel baking**
    For the Body/Enamel baking, please refer to the baking schedule, page 28. If porcelain does not have a definite shininess, rebake with higher temperature.

12. **1st and 2nd Internal Stain (IS) application**
    CZR IS must be used with only CZR and its application must be done after baking Body and Enamel. 1st application of IS should be in a horizontal direction. And 2nd application of IS in a vertical direction. The 1st and 2nd baking of IS should follow the baking schedule. If applying IS in a horizontal direction and a vertical direction on the surface of crown at the same time, the cross-area is blurred. Therefore, it is recommended to bake them separately.
Translucent and Luster Porcelain application
Translucent and Luster Porcelain should be overlayed by approximately 10 percent bigger than a target shape allowing for their shrinkage.

Translucent and Luster Porcelain baking
For the Translucent/Luster baking, please refer to the baking schedule, page 28.

Morphological Correction, Glazing and Final polishing
Noritake Meister Point and Meister Cones are recommended for the morphological correction. After the morphological correction, please make a next steps to steam cleaning and self glaze baking. For final polish, using Noritake Pearl Surface is recommended. Due to the translucency of the zirconia framework, it can be fabricated an All-ceramic crown which is more closely to natural dentition than porcelain fused to metal crown.

Using Margin Porcelain
For adjusting margin area of zirconia framework
- Magic Separator application
  - Apply Magic Separator to the margin area of the die in order to avoid of adhering Margin Porcelain to the die.
- Margin Porcelain application
  - Apply the adequate amount of margin porcelain with Noritake Magic Former to the gingival part. If Margin Porcelain is too thick, the area tends to look artificial. Apply the Margin Porcelain in a triangular structure.
- Baking of Margin Porcelain
  - Follow the baking schedule on page 28. After baking the Margin Porcelain, it is recommended to bake again according to schedule.

Layering
- Luster / Translucent
- Enamel
- Body
- Opacous Body
- Shade Base
- Zirconia Framework

CZR PRESS

CZR PRESS is an innovative breakthrough in ceramic nano-technology which consists of the marriage of two time-proven technologies, oxide ceramics and pressable ceramics. This synergy combines the strength, fracture toughness and cementability of pure zirconium oxide copings with the marginal integrity, versatility and beauty of pressable ceramics. Add opalescence and fluorescence to the ingot and the result ... simply imPRESSive!

Products
Features
- CZR PRESS can be used with pure zirconia framework.
- Unlike traditional metal frameworks, Zirconia frameworks used in CZR PRESS facilitate light transmission into the root and papillae area, thus creating a natural, vital-looking smile.
- CZR PRESS offers 24 shades of fluorescent ingots, each in 2 translucencies:
  - H-ingot — for use when utilizing the “Staining Method” & “LF Layering Method”
  - L-ingot — for use when utilizing the “Layering Method” & “LF Layering Method”
  - EW-ingot (4 whitening shades) — for creating whiter shades than the conventional bleach shades.
- CZR PRESS features a “never before seen” opalescent quality which exhibits an exceptional vitality and luster similar to nature.
- CZR PRESS may be used for single unit All-ceramic restorations without frameworks.
- Noritake CZR layering porcelain perfectly compliments CZR PRESS L-ingot to provide unsurpassed esthetic results.
- Noritake CZR PRESS LF porcelain can be used for single unit restorations without frameworks after pressing.
- CZR PRESS may be pressed in any conventional press furnace.

Physical Properties
- Flexural Strength (MPa) 92.7
- Coefficient of Thermal Expansion [50-500°C] 10.1
- Transformation Temperature [°C] 615

Beautiful Opalescent of CZR PRESS Ingots. (Photo by Mr. Brian Linde)
Zirconia materials for CZR PRESS

The most popular dental zirconia materials available on the market are the “3YTZP” type. This is made by including a minute amount of Yttria (Y2O3) into solid-soluted Zirconia (ZrO2) and it is called partial stabilized zirconia. As feature of zirconia, it has a high-strength in a room temperature but low-strength in a high-temperature such as 1000°C and its strength will return to the original high-strength when it is cooled to the room temperature. The graph below shows the relationship between its strength and temperatures. Pressable ceramic ingots are pressed at a high temperature on a zirconia frameworks. If the framework design is not proper, zirconia framework may crack when ingots are pressed. Therefore, framework design is one of very important issues.

For Single Crowns, Maintain 0.8mm Thickness of pressed ceramic in all areas.

For Bridges:
- Maintain 0.8mm Thickness of pressed ceramic on abutments, embrasures, pontic tissue area and at the papillae.
- The basic preparation is to allow the pressed ceramic to cover a 360 degrees shoulder with rounded edge or chamfer.
- The thickness of the connectors of the zirconia bridge, please follow the manufacturer’s instruction.

Note

This technique is not suited to a severely discolored tooth.
Trimming of the zirconia framework

The thickness of zirconia framework in all area should be 0.4mm at least to obtain a successful CZR pressing. And at this stage, please weigh the framework and record it. This weight information may be utilized later as a reference to determine how many ingots are used for pressing.

Checking of cracks in zirconia framework

In order to check if there are any cracks in the zirconia framework after grinding, apply Noritake Crack Finder all over the inside and the outside of zirconia framework and one minute later, rinse it with water to wipe off the extra liquid on the suface. If there are cracks, the liquid penetrates into the cracks, and make it easy to find them.

Note

Never use the cracked zirconia framework

However small a crack is in a framework, please do not use such cracked framework. Because, a tiny crack can become bigger and wider during pressing and the strength of the framework can be lowered.

Alumina Sandblasting of zirconia framework surface

Create a matt-finish surface by sandblasting with 50μm alumina at 2 bars pressure.

Cleaning of the zirconia framework

Clean the framework ultrasonically for 5 minutes in an acetone solution to remove residual zirconia dust and other debris.

1st Shade Base Stain application

The differences between CZR Shade Base Porcelain and CZR PRESS Shade Base Stain

<table>
<thead>
<tr>
<th></th>
<th>CZR Shade Base Porcelain</th>
<th>CZR PRESS Shade Base Stain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baking temperature</td>
<td>1st. 930°C (1,706°F)</td>
<td>2nd. 930°C (1,706°F)</td>
</tr>
<tr>
<td>Build-up thickness</td>
<td>1st. 25μm 0.2mm</td>
<td>1080°C (1,976°F)</td>
</tr>
<tr>
<td>Combination with CZR Porcelain</td>
<td>1st. Good</td>
<td>2nd. Good</td>
</tr>
<tr>
<td>Combination with CZR PRESS</td>
<td>Not acceptable</td>
<td>Good</td>
</tr>
<tr>
<td>Recommended Liquid</td>
<td>Meister Liquid</td>
<td>IS Liquid</td>
</tr>
</tbody>
</table>

Note

Secure more than 0.4mm thickness in all area of the zirconia framework. In case of less than 0.4mm, cracks may be happened.

The thickness of Margin area should also be 0.4mm at least. (Refer to the upper right illustration) So, such shoulder as Knife-edge is not acceptable.

The margin line should be smooth.

When grinding zirconia framework, it is recommended to use burs/discs with minute diamond particles such as Noritake Meister Points SC-51 and SD-61. If using tools with rough diamond particles, it may cause sharp scratch on the surface and/or cracks into the framework. In addition, cooling the framework with water is necessary to avoid heat generation caused during grinding.

The margin line should be smooth.

Serrated margin line is should be corrected.

Meister Points SC-51 and SD-61

Crack is happened during grinding.

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Mix the shade base stain with **IS Liquid**. The viscosity of the mixture should be like “Maple Syrup”, so that the mixture does not slip down from the framework or puddle at the margins. Apply the mixture evenly and thinly, covering the zirconia framework in 0.15mm thickness, which is slightly thicker than conventional external stain. Shade Base Stain is a necessary step to produce the basic one for color. For the 1st Shade Base Stain baking, please refer to the baking schedule, page 28.

**Note**

IS Liquid should never be mixed with water. If mixed, the color will not be clear and the applied mixture will detach from the zirconia framework during drying process. The application brush should be cleaned with IS Liquid only. Never use water for cleaning.

- **2nd Shade Base Stain application**

Apply the Shade Base Stain again in a thickness of about 0.15 mm. To produce an even basic color, be sure to perform the 2nd application and baking. For the 2nd Shade Base Stain baking, please refer to the baking schedule, page 28. Also refer to the Shade Base Stain Color Guide for checking the shades. If applied too thinly, the shade will be low in chroma. If applied too thickly, the shade will be high in chroma.

**Note**

Do not make sharp angles or deep under cuts. After wax-up, check if there is any wax left inside of the framework. If there is, carefully wipe off the wax. Also, confirm that there is no space between the wax and the margin line of die model fill in the space with wax.

- **Spruing, attaching to the pedestal base and ring preparation**

Use 8 gauge (3.3mm diameter) and 2~3 mm long sprues. Attach sprues to wax patterns and position it on pedestal base to facilitate a smooth flow of the pressable ceramic. If some parts of the wax pattern are thin, pressable materials may not reach those areas during pressing. So, more than one sprue may be used.

- **Single crowns:**

For larger posterior teeth, position one sprue on convexity area, closer to the proximal wall so that pressed ceramic may flow smoothly. Spruing in this way preserves delicate wax contours and little morphological correction is needed. (See A, page 17).

- **Bridges:**

Place each sprue on each abutment and each pontic. Make the sprue as short as possible: approximately 2~3 mm in length (See B, page 17).

---

**Wax-up**

- **Layering Method**

The 90% size of restored crown should be formed with wax-up. Margin area should be formed with wax-up as well. But, forming of mamelon structure is not necessary at this wax-up stage. Mamelon structure will be formed after pressing ingot. Before pressing, please make sure of the sufficient thickness of wax for the pressed ceramic. Please refer to the picture on page 12.

- **Stain Method**

Almost 100% full-contour of restored crown should be formed with wax-up. Margin area should be formed with wax-up as well.
After attaching sprues, weigh the waxed restoration and then deduct the weight of the zirconia framework recorded previously to find the net wax weight which is a guideline to determine later how many ingot to use. When attaching wax pattern to the pedestal base, place wax pattern where it should be apart by 8mm from the inner wall of the ring and by 10mm from the top-leveling cap. When attaching more than 2 wax patterns, the distance between each wax pattern should be 5mm at least. The ideal angle for attaching wax pattern to the pedestal base is 30°-60 degree. (Fig.1) When attaching wax patterns in different size to the same pedestal base, those margins should be at the same height. (Fig.2) Then, spray dry Teflon r-Silicone to the inside of the ring, ring-gauge (leveling cap) and ring former (pedestal base) of Noritake Ring Former to prevent investment from sticking to their surfaces.

1. **Investing**

   Referring to manufacturer’s instructions, prepare for press investment. Then, mix the investment mechanically for 1 minute under vacuum and fill the investment in the ring without producing any bubbles.

2. **Preparation before burn-out**

   After investing, the ring should leave as it is at room temperature until the investment is concreted for around a half hour. And, remove the concreted investment from the ring former and ring gauge and cut the investment button created by the leveling cap with a dry knife. Before baking, make sure if the angle of ring top & bottom surfaces and the side should be 90 degrees.

3. **Burn-out of investment ring**

   Preheat the burn-out furnace to 850°C (1562°F). Place the investment ring in the center of the furnace. Preheating of the ceramic ingot and the plunger is not required. Do not burn-out press rings with other rings (e.g. soldering models, casting ring, etc).

4. **Selection of CZR PRESS ingots**

   Select ingots dependent upon the method. For the Layering method, select L-Ingot with low transparency and for the Stain method, select H-Ingot with higher transparency.

---

**Fig.1**

Correct spruing

Wrong spruing

30-60°

90°

Horizontal Plane

**Fig.2**

Remove the button of investment created by leveling cap

Carefully level the ring so that the top and bottom are perpendicular to the sides of the ring.

Burn-out
Divesting

Carefully divest the ring to avoid breaking the pressed ceramic. At first, remove the bulk of the investment material using sand blaster with 50μm alumina sands at a pressure of 58~87psi (0.4MPa~0.6MPa). Once the pressed ceramic is exposed, lower the sandblasting pressure to less than 29psi (0.2MPa) and continue alumina sandblasting carefully so as not to chip the thin areas such as the margins or incisal edge. Glass beads are recommended for the thin areas such as the margin and the incisal edge. When divesting patterns, the direction of sandblasting spray should be parallel to the long axis of each crown.

Cutting off the sprue

Using a diamond disk for sprue separation, 1st score a line around the sprue, at 2mm from the crown, then carefully cut through the sprue at low speed. In this way, even if the cracks are founded in the sprue, they will not spread into the crown. Next, eliminate the remaining sprue-button on the crown with a diamond point. During this process, do not generate excessive heat. Noritake Meister Points are recommended for sprue cutting and morphological correction of the crown.

## Inserting ingot and plunger

One piece of ingot is to create up to two crowns and two pieces of ingots are to create three or more crowns, however, if the wax pattern(s) weight is 0.6g or less, use one piece of ingot and if the weight is between 0.7g and 1.4g, use two pieces of ingots. Pay special attention not to insert any foreign debris or not to adhere anything to the ingots or to the plunger. In addition, the plunger should be inserted into the pressing canal vertically.

### Pressing in the press furnace

Insert the ingots and press plunger into the ring, then place the ring on the center of pressing platform. The pressing schedule may differ depending upon the press furnace manufacturer. Adjust the schedule so as that pressing will stop once the ceramic is fully pressed into the cavity. Excessive press time may cause various problems including split rings, porosity, value shift and brittle or fractured restorations. Follow the pressing schedule according to the pages 33~35. After pressing, immediately remove the investment ring from the furnace and cool it down at room temperature until the ring is cool enough to be held.

### Removal of plunger

Mark the top position of the plunger, and cut the investment ring with a separating disk. Separate the ring with a plaster nipper. Be careful not to damage the plunger. When removing the ceramic attached to the plunger, use with alumina sand blaster.

### Relation of Wax Weight and Number of Ingot

<table>
<thead>
<tr>
<th>Wax Weight</th>
<th>Number of 2g ingots</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6g or less</td>
<td>1</td>
</tr>
<tr>
<td>0.7g up to 1.4g</td>
<td>2</td>
</tr>
</tbody>
</table>

### Cutting off the sprue

Using a diamond disk for sprue separation, 1st score a line around the sprue, at 2mm from the crown, then carefully cut through the sprue at low speed. In this way, even if the cracks are founded in the sprue, they will not spread into the crown. Next, eliminate the remaining sprue-button on the crown with a diamond point. During this process, do not generate excessive heat. Noritake Meister Points are recommended for sprue cutting and morphological correction of the crown.
Morphological correction of pressed ceramic

Place the pressed restoration on the model and check the fit at the margin under magnification. The depends on which technique is chosen: For the “Layering Method”, create the mamelon structure with Noritake Meister Points. Special care should be taken to maintain a minimum thickness of entire pressed restoration no less than 0.8mm. For the “Staining Method”, refine the surface and delicately. After the contours have been finalized, smooth the surface of the pressed ceramic by sandblasting with 50μm alumina at 2 bars pressure.

Cleaning
Clean the pressed ceramic for 5 minutes in an acetone solution using an ultrasonic cleaner.

Layering Method

L1. Build-up and baking of CZR Porcelain
Build-up CZR Enamel and Translucent over the pressed ceramic. The pressed ceramic will not “self-glaze” at the glaze temperature of CZR Porcelain, so be sure to cover the entire surface of the pressed ceramic with CZR Porcelain. The baking schedule for layering porcelain is the same as for CZR Porcelain. Refer to CZR baking schedule at page 28. If creating characterizing or adjusting chroma-up, apply CZR Internal Stain on the pressed ceramic and bake it before building-up Enamel, Translucent and Luster Porcelains.

Note
Refer to page 5~9 for the build-up techniques for CZR Porcelain.

L2. Morphological correction
After baking the layering porcelains, perform morphological correction as usual. When additional layering porcelains are required, apply the porcelains again and follow the baking schedule of CZR.

L3. Stain and glaze
If putting characterizations or glazing are required, apply the CZR External Stain (ES) or Glaze power and bake them. Refer to the baking schedule at page 28.

Stain Method

S1. Application and baking of CZR ES
Mix CZR ES with ES Liquid. The viscosity of the mixture is the same as ordinary stains. If too much liquid is used, since the stain will move easily after application, a certain viscosity is necessary. For creating A shades, apply ES stain A+ over the area except the incisal edge or occlusal surface, apply ES stains such as Blue, Gray and White. When creating characterization with more than two ES, it is recommended not to bake simultaneously.
CZR PRESS LF is low fusing porcelain to build up an enamel layer after pressing CZR PRESS ingot. By using this porcelain with CZR Press ingot and without a zirconia framework, you can make an anterior single crown, a porcelain laminate veneer, an inlay and an onlay.

**Features**

1. CZR PRESS LF has an excellent match in CTE with CZR PRESS ingot.
2. CZR PRESS LF enables you to create All-ceramic restoration without a zirconia framework.
3. CZR PRESS LF has a sufficient strength in oral.
4. A wide variety of shades including aesthetic shades are available.
5. An ideal opalescence has been realized in Luster Porcelain.
6. CZR PRESS LF can also be used for correcting shades of CZR pressed ceramic and CZR Porcelain.

**Products — LF Porcelain**

- **LF Porcelain**

S2. 1st Glazing with CZR PRESS Glaze Powder
Mix CZR PRESS Glaze Powder with IS Liquid to create a “cold honey-like” glaze paste. Do not wet the surface of the restoration with IS Liquid prior to glaze-application, otherwise, application is not even on entire surface of the crown. For even-application, its thickness should be 0.2mm. After check if the entire surface is covered with glaze, please bake it refer to the baking schedule, page 28.

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S3. Adjusting the contact area and Morphological Correction
Using a rubber wheel such as the Meister Point SF-41, adjust the contact area of glaze layer. If necessary, make morphological correction. Finally, clean the restoration for 5 minutes in an aceton solution using an ultrasonic cleaner.

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S4. 2nd Glazing and Completion
If applying diluted glaze mixture on the crown and bake it, the baked crown surface are variation in brightness because the mixture is running down during baking. In case of this, apply the glaze again and bake it.

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**Products — LF Stains**

- **Outstanding Resistance to Bubbles**
  CZR PRESS LF IS is specially formulated to have a similar coefficient of thermal expansion to CZR pressed ceramic and CZR PRESS LF Porcelain. CZR PRESS LF IS has outstanding resistance to bubbling and fractures. CZR PRESS LF ES has minimal risk of separation even after long term intraoral function.

- **Assortment of shades**
  The shades were line-uped after server check for replicating colors shown in natural teeth. Accurate color reproduction can be easily done by applying those stains.

- **Easy Reproduction of shades**
  By applying internal stains, characterization and chroma-up on the crown can be realized like painting a picture.

- **Controlling Reflectivity**
  By applying stain on the CZR pressed ceramic, excessive reflectivity can be easily controlle.
Working Procedures  Fabrication of a stand-alone single crown

1. Wax-up  
In case a zirconia framework is not used, directly wax-up to the dentin shape with about 90% size of a targeted restoration. Do not make a mamelon structure. The thickness in the margin area should be more than 1.0mm in order to avoid chipping.
★Refer to page 16

2. Spruing and investing  
Perform Spruing and investing.  
★Refer to pages 16–18

3. Preheating of investment ring  
After half an hour from investing, place the investment ring into the preheated burn-out furnace at 850°C (1,562°F) and hold for an hour.  
★Refer to page 18

4. Pressing of CZR PRESS Ingot  
Place the investment ring with the inserted ceramic ingot in the PRESS Furnace and heat-press at the specified temperature.  
★Refer to pages 33–35

5. Divesting and sprue-cutting  
Carefully devest the ring to avoid breaking the pressed ceramic. Using a diamond disk for sprue separation.  
★Refer to page 20

6. Morphological correction of pressed ceramic  
Securing enough space for the Enamel, Translucent (Luster) Porcelains that are built-up later. Before layering those porcelains, adjust the thickness of labial surface and make the mamelon structure.

Note: This is a low fusing porcelain. In case any fiber such as tissue paper remains after baking, it should be removed.

7. Alumina sandblasting  
Blow Alumina sandblasting all over the surface of the pressed ceramic at the pressure of 0.2MPa (29psi).

8. Cleaning  
Clean the pressed ceramic for 5 minutes in acetone with an ultrasonic cleaner or steam cleaner.

9. LF Enamel application  
Apply LF Enamel on the incisal area. If necessary, LF Translucent and LF Luster Porcelain can be overlayerd LF Enamel. Therefore please pay attention to layering thickness.

10. LF Internal Stain (LF IS) application (if necessary)  
When ever using IS, mix it with Noritake IS Liquid. 1st application of LF IS should be in a horizontal direction. And 2nd application of LF IS in a vertical direction. If apply LF IS in a horizontal direction and a vertical direction on the surface of crown at the same time, the cross-area is blurred. Therefore, it is recommended to bake them separately.

11. LF Translucent and LF Luster Porcelain application  
LF Translucent and LF Luster Porcelain should be overlayerd by approximately 10 percent bigger than a target shape allowing for their shrinkage. Please bake at the designate temperature in the baking schedule, page 28.

12. Baking  
Bake the built up crown according to the baking schedule, page 28.
Morphological Correction
Noritake Meister Point and Meister Cones are recommended for the morphological correction.

Cleaning
Clean the restoration for 5 minutes in acetone with an ultrasonic cleaner.

LF External Stain (LF ES) application and Glaze baking
A. In case of layering on the entire surface of the crown, (CZR pressed ceramic cannot be seen.)
B. In case of layering on the surface of the crown partially, (CZR pressed ceramic can be seen partially.)

Bake the crown according to baking schedule, page 28. If necessary, Mix the LF Glaze Powder or LF ES with ES Liquid. Its viscosity is the same as ordinary stains. Then apply and bake it.

B2. Glaze Baking
Mix LF Glaze Powder with ES Liquid to create a “melt-like” glaze paste. Do not wet the surface of the restoration with ES Liquid prior to glaze application. Otherwise, application is not even on entire surface of the crown. After mixing, apply glaze thinly on the surface is covered with glaze, bake it in accordance with the baking schedule. In case of making more glossy on the surface where CZR PRESS LF is not baked, apply glaze again and bake.

Completion

<table>
<thead>
<tr>
<th>Baking Schedule</th>
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<table>
<thead>
<tr>
<th></th>
<th>Dry-Out Time</th>
<th>Low Temperature</th>
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<th>Hold Time</th>
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<td>600 1112</td>
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| Note: The above program is only a guideline, Baking Temperature may be varied with the peculiarities of different furnace. |

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**Margin**

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**Modifier**

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**Add-on**

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**External Stain**

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**Internal Stain**

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**Press Ingots**

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**CZR PRESS Glaze**

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<th>50g</th>
<th>200g</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>L2</td>
<td>L3</td>
<td>L4</td>
<td>L5</td>
</tr>
<tr>
<td>Tissue 1</td>
<td>Tissue 2</td>
<td>Tissue 3</td>
<td>Tissue 4</td>
<td>Tissue 5</td>
</tr>
</tbody>
</table>

**CZR PRESS Glaze**

<table>
<thead>
<tr>
<th>Shade Base</th>
<th>Material</th>
<th>10g</th>
<th>50g</th>
<th>200g</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>B+</td>
<td>C+</td>
<td>D+</td>
<td>E+</td>
</tr>
<tr>
<td>Cervical 1</td>
<td>Cervical 2</td>
<td>Cervical 3</td>
<td>Cervical 4</td>
<td>Cervical 5</td>
</tr>
</tbody>
</table>

**Press Ingots**

<table>
<thead>
<tr>
<th>Shade Base</th>
<th>Material</th>
<th>10g</th>
<th>50g</th>
<th>200g</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>L2</td>
<td>L3</td>
<td>L4</td>
<td>L5</td>
</tr>
<tr>
<td>Tissue 1</td>
<td>Tissue 2</td>
<td>Tissue 3</td>
<td>Tissue 4</td>
<td>Tissue 5</td>
</tr>
</tbody>
</table>

**CZR PRESS Glaze**

<table>
<thead>
<tr>
<th>Shade Base</th>
<th>Material</th>
<th>10g</th>
<th>50g</th>
<th>200g</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>B+</td>
<td>C+</td>
<td>D+</td>
<td>E+</td>
</tr>
<tr>
<td>Cervical 1</td>
<td>Cervical 2</td>
<td>Cervical 3</td>
<td>Cervical 4</td>
<td>Cervical 5</td>
</tr>
</tbody>
</table>

**Press Ingots**

<table>
<thead>
<tr>
<th>Shade Base</th>
<th>Material</th>
<th>10g</th>
<th>50g</th>
<th>200g</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>L2</td>
<td>L3</td>
<td>L4</td>
<td>L5</td>
</tr>
<tr>
<td>Tissue 1</td>
<td>Tissue 2</td>
<td>Tissue 3</td>
<td>Tissue 4</td>
<td>Tissue 5</td>
</tr>
</tbody>
</table>
## Color Combination Table

### Layering Method

<table>
<thead>
<tr>
<th>Shade Base (Shade Base Stain)</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>B4</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>MA1</td>
<td>MA2</td>
<td>MA3</td>
<td>MA4</td>
<td>MB1</td>
<td>MB2</td>
<td>MB3</td>
<td>MB4</td>
<td>MB5</td>
<td>MB6</td>
<td>MB7</td>
<td>MB8</td>
<td>MB9</td>
</tr>
<tr>
<td>Opacous Body</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
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<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
<td>OBA</td>
</tr>
<tr>
<td>Cervical</td>
<td>-</td>
<td>CV1</td>
<td>CV1</td>
<td>CV1</td>
<td>CV1</td>
<td>CV2</td>
<td>CV2</td>
<td>CV2</td>
<td>CV2</td>
<td>CV2</td>
<td>CV2</td>
<td>CV2</td>
<td>CV2</td>
</tr>
<tr>
<td>Enamel</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

### Translucent (Luster)

<table>
<thead>
<tr>
<th>Shade Base (Shade Base Stain)</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>MCD</td>
<td>MCD</td>
<td>MCD</td>
<td>MCD</td>
<td>MCD</td>
<td>MCD</td>
<td>MCD</td>
<td>MCD</td>
</tr>
<tr>
<td>Opacous Body</td>
<td>OBC</td>
<td>OBC</td>
<td>OBC</td>
<td>OBC</td>
<td>OBC</td>
<td>OBC</td>
<td>OBC</td>
<td>OBC</td>
</tr>
<tr>
<td>Body</td>
<td>C-B</td>
<td>C-B</td>
<td>C-B</td>
<td>C-B</td>
<td>D-B</td>
<td>D-B</td>
<td>D-B</td>
<td>D-B</td>
</tr>
<tr>
<td>Cervical</td>
<td>L</td>
<td>CV3</td>
<td>CV3</td>
<td>CV3</td>
<td>CV4</td>
<td>CV4</td>
<td>CV4</td>
<td>CV4</td>
</tr>
<tr>
<td>Enamel</td>
<td>E2</td>
<td>E3</td>
<td>E3</td>
<td>E3</td>
<td>E3</td>
<td>E3</td>
<td>E3</td>
<td>E3</td>
</tr>
</tbody>
</table>

### Translucent (Luster)

<table>
<thead>
<tr>
<th>Shade Base (Shade Base Stain)</th>
<th>NP1</th>
<th>NP2</th>
<th>NW1</th>
<th>NW2</th>
<th>NW3</th>
<th>NW4</th>
<th>NW5</th>
<th>NW6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>MNP1</td>
<td>MNP2</td>
<td>MNW1</td>
<td>MNW2</td>
<td>MNW3</td>
<td>MNW4</td>
<td>MNW5</td>
<td>MNW6</td>
</tr>
<tr>
<td>Opacous Body</td>
<td>OBPN1</td>
<td>OBPN2</td>
<td>OBPN3</td>
<td>OBPN4</td>
<td>OBPN5</td>
<td>OBPN6</td>
<td>OBPN7</td>
<td>OBPN8</td>
</tr>
<tr>
<td>Body</td>
<td>NP</td>
<td>NP</td>
<td>NW1</td>
<td>NW2</td>
<td>NW3</td>
<td>NW4</td>
<td>NW5</td>
<td>NW6</td>
</tr>
<tr>
<td>Cervical</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
</tr>
<tr>
<td>Enamel</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

### Color Shading Table

<table>
<thead>
<tr>
<th>Shade Base Stain</th>
<th>SBB – (SBB)</th>
<th>SBA – (SBA)</th>
<th>SBA – (SBA)</th>
<th>SBA – (SBA)</th>
<th>SBB – (SBB)</th>
<th>SBB – (SBB)</th>
<th>SBA – (SBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press Ingot</td>
<td>L-A</td>
<td>L-A</td>
<td>L-A</td>
<td>L-A</td>
<td>L-A</td>
<td>L-B</td>
<td>L-B</td>
</tr>
<tr>
<td>Enamel</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
<td>E1</td>
</tr>
<tr>
<td>Cervical</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
</tbody>
</table>

### Glaze Powder

- CZR PRESS Glaze Powder

### Staining Method - EW shades:

<table>
<thead>
<tr>
<th>Shade Base Stain</th>
<th>SS A1</th>
<th>SS A2</th>
<th>SS A3</th>
<th>SS A4</th>
<th>SS A5</th>
<th>SS B1</th>
<th>SS B2</th>
<th>SS B3</th>
<th>SS B4</th>
<th>SS C1</th>
<th>SS C2</th>
</tr>
</thead>
</table>

### Staining Method without framework

<table>
<thead>
<tr>
<th>Shade Base Stain</th>
<th>SS A1</th>
<th>SS A2</th>
<th>SS A3</th>
<th>SS A4</th>
<th>SS A5</th>
<th>SS B1</th>
<th>SS B2</th>
<th>SS B3</th>
<th>SS B4</th>
<th>SS C1</th>
<th>SS C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaze Powder</td>
<td>LF Glaze</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Staining Method without framework - EW shades:

<table>
<thead>
<tr>
<th>Shade Base Stain</th>
<th>SS A1</th>
<th>SS A2</th>
<th>SS A3</th>
<th>SS A4</th>
<th>SS A5</th>
<th>SS B1</th>
<th>SS B2</th>
<th>SS B3</th>
<th>SS B4</th>
<th>SS C1</th>
<th>SS C2</th>
</tr>
</thead>
</table>

### Notes:

1. To acquire shades of B, C, D, & EW, dilute B, C, D, & NW with MDL. The diluting ratio is 1:1.
2. To acquire shades of EWY, dilute EWY with MDL at the ratio 2:1.
Pressing Parameters

**Recommendation of “Pressing at low pressure” during CZR Pressing**

The press furnace pressure for the presseable technique is usually set at 4 bar (0.4 MPA) to 5 bar (0.5 MPA). However, in the case of pressing of CZR PRESS ingots, this pressure is too high and often cause the following problems.

1. Cracks on the zirconia frameworks after pressing
2. Breaking on the investment ring after pressing

In order to avoid such problems, we would like you to lower the pressuring pressure during CZR PRESS pressing. This is strongly recommended as well as the notes for the zirconia framework thickness and shape. Please adjust the pressing schedule referring to the following tables. As a general rule, longer pressing time is required at low pressure. Adjust the pressure regulator in the manufacturer’s Schedule.

### EP500 (Ivoclar)

<table>
<thead>
<tr>
<th>Pressing in a 100g ring</th>
<th>2g × 1 Ingot</th>
<th>Ring Size:wt.100g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>508°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressing in a 200g ring</th>
<th>2g × 1 Ingot</th>
<th>Ring Size:wt.200g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>608°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressing in a 300g ring</th>
<th>2g × 1 Ingot</th>
<th>Ring Size:wt.300g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>608°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

In case of EP500, set the pressure at 4.5 bar.

### EP600 (Ivoclar)

<table>
<thead>
<tr>
<th>Pressing in a 100g ring</th>
<th>2g × 1 Ingot</th>
<th>Ring Size:wt.100g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>508°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressing in a 200g ring</th>
<th>2g × 2 Ingot</th>
<th>Ring Size:wt.200g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>608°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressing in a 300g ring</th>
<th>2g × 1 Ingot</th>
<th>Ring Size:wt.300g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>608°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

In case of EP600, set the stopping speed at 300μm./min. and adjust the press cycle. The above pressing times are recommended only as our guide. Please find the best pressing times that suit your furnace depending upon the size and number of the patterns.

### Multimat2 Touch & Press (Dentsply DeTrey)

<table>
<thead>
<tr>
<th>Pressing in a 100g ring</th>
<th>2g × 1 Ingot</th>
<th>Ring Size:wt.100g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>508°F</td>
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<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressing in a 200g ring</th>
<th>2g × 2 Ingot</th>
<th>Ring Size:wt.200g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>608°F</td>
<td>60°C</td>
</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pressing in a 300g ring</th>
<th>2g × 2 Ingot</th>
<th>Ring Size:wt.300g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Temp.</strong></td>
<td><strong>Vacuum Level</strong></td>
<td><strong>Heat Rate</strong></td>
</tr>
<tr>
<td>700°C</td>
<td>608°F</td>
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</tr>
<tr>
<td>1252°F</td>
<td>108°F</td>
<td>101°F</td>
</tr>
</tbody>
</table>

Please check the latest parameters in our up-dated web-site at:

http://www.noroiwake.co.jp/dental

### Pro-Press100 (Whip Mix Intraphys)

#### Pressing in a 100g ring | 2g × 1 Ingot | Ring Size:wt.100g

<table>
<thead>
<tr>
<th><strong>Entry Temp.</strong></th>
<th><strong>Vacuum Level</strong></th>
<th><strong>Heat Rate</strong></th>
<th><strong>Press Temp.</strong></th>
<th><strong>Hold Time</strong></th>
<th><strong>Press Time</strong></th>
<th><strong>Pressure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>700°C</td>
<td>Full</td>
<td>60°C</td>
<td>1065°C</td>
<td>15min.</td>
<td>4min.</td>
<td>2.7bar</td>
</tr>
<tr>
<td>1252°F</td>
<td>Full</td>
<td>108°F</td>
<td>1949°F</td>
<td>20min.</td>
<td>5min.</td>
<td>2.7bar</td>
</tr>
</tbody>
</table>

**Note:** In case Special Function Button has been selected, enter "0min." for Re-Press time.

#### Pressing in a 200g ring | 2g × 2 Ingot | Ring Size:wt.200g

<table>
<thead>
<tr>
<th><strong>Entry Temp.</strong></th>
<th><strong>Vacuum Level</strong></th>
<th><strong>Heat Rate</strong></th>
<th><strong>Press Temp.</strong></th>
<th><strong>Hold Time</strong></th>
<th><strong>Press Time</strong></th>
<th><strong>Pressure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>700°C</td>
<td>Full</td>
<td>60°C</td>
<td>1065°C</td>
<td>15min.</td>
<td>4min.</td>
<td>2.7bar</td>
</tr>
<tr>
<td>1252°F</td>
<td>Full</td>
<td>108°F</td>
<td>1949°F</td>
<td>20min.</td>
<td>5min.</td>
<td>2.7bar</td>
</tr>
</tbody>
</table>

**Note:** In case Special Function Button has been selected, enter "4min." for Re-Press time.

The above pressing times are recommended only as our guide. Please find the best pressing times that suit your furnace depending upon the size and number of the patterns.

### Ceram Press QEX (Dentsply NeyTech)

#### Pressing in a 100g ring | 2g × 1 Ingot | Ring Size:wt.100g

<table>
<thead>
<tr>
<th><strong>Entry Temp.</strong></th>
<th><strong>Vacuum Level</strong></th>
<th><strong>Heat Rate</strong></th>
<th><strong>Press Temp.</strong></th>
<th><strong>Hold Time</strong></th>
<th><strong>Press Time</strong></th>
<th><strong>Pressure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>700°C</td>
<td>Full</td>
<td>60°C</td>
<td>1065°C</td>
<td>15min.</td>
<td>4min.</td>
<td>3.5bar</td>
</tr>
<tr>
<td>1252°F</td>
<td>Full</td>
<td>108°F</td>
<td>1949°F</td>
<td>20min.</td>
<td>5min.</td>
<td>3.5bar</td>
</tr>
</tbody>
</table>

#### Pressing in a 200g ring | 2g × 2 Ingot | Ring Size:wt.200g

<table>
<thead>
<tr>
<th><strong>Entry Temp.</strong></th>
<th><strong>Vacuum Level</strong></th>
<th><strong>Heat Rate</strong></th>
<th><strong>Press Temp.</strong></th>
<th><strong>Hold Time</strong></th>
<th><strong>Press Time</strong></th>
<th><strong>Pressure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>700°C</td>
<td>Full</td>
<td>60°C</td>
<td>1065°C</td>
<td>15min.</td>
<td>4min.</td>
<td>3.5bar</td>
</tr>
<tr>
<td>1252°F</td>
<td>Full</td>
<td>108°F</td>
<td>1949°F</td>
<td>20min.</td>
<td>5min.</td>
<td>3.5bar</td>
</tr>
</tbody>
</table>

**Note:** In case Special Function Button has been selected, enter "14min." for Re-Press time.

### Auto Press Plus (Pentron Lab)

#### Pressing in a 200g ring | 2g × 1 Ingot | Ring Size:wt.200g

<table>
<thead>
<tr>
<th><strong>Entry Temp.</strong></th>
<th><strong>Vacuum Level</strong></th>
<th><strong>Heat Rate</strong></th>
<th><strong>Press Temp.</strong></th>
<th><strong>Hold Time</strong></th>
<th><strong>Press Time</strong></th>
<th><strong>Pressure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>700°C</td>
<td>Full</td>
<td>60°C</td>
<td>1065°C</td>
<td>15min.</td>
<td>4min.</td>
<td>3.5bar</td>
</tr>
<tr>
<td>1252°F</td>
<td>Full</td>
<td>108°F</td>
<td>1949°F</td>
<td>20min.</td>
<td>5min.</td>
<td>3.5bar</td>
</tr>
</tbody>
</table>

**Note:** For the pressing at low pressure, we have tested many times and decided the pressing schedule. But, please note that the pressing at lower pressure is recommended.
**Precautions for Handling — CZR**

1. This porcelain is for zirconia frameworks.
2. To avoid heat-shock of the framework, when grinding the framework, do not use excessive pressure or speed.
3. Follow the manufacturer’s instructions for handling the zirconia framework, re-use of the zirconia framework should be limited to two times.
4. Secure more than 0.4mm thickness in all parts of the zirconia framework, do not use excessive pressure or speed.
5. Do not mix with any other porcelain, including another Noritake Porcelain or another manufacturer’s porcelain.
6. Before applying the wash-bake of Shade Base, steam clean the framework.
7. Use Carabien Forming Liquid, Meister Liquid or distilled water with CZR powder.
8. For adequate bond strength as well as to achieve proper value, it is necessary that the 1st layer of Shade Base is a wash-bake layer.
9. CZR is baked properly when the surface has a slight luster after baking. Please adjust your furnace to achieve this result.
10. Observe the recommended cool time. Do not cool CZR too quickly.
11. Do not use metal baking pegs. The metal may stain the inside of ceramic and Stain powder.
12. CZR PRESS cannot be used on alumina frameworks and metal frameworks.
13. Do not use other manufacturers’ Shade Base Stain.
14. Due to lower baking temperature, CZR Shade Base Porcelain must not be used for CZR PRESS. CZR PRESS Shade Base Stain must be used for CZR PRESS restorations.
15. To prevent contamination from foreign materials in the pressed ceramic, always use new wax which does not contain impurities and burns-out without leaving ash and other residues. Be sure that the framework surface is clean before wax-up.
16. Ceramic ingots cannot be re-used. Re-using ingots will cause certain restoration failure.
17. Never use hydrofluoric acid when it becomes necessary to remove the pressed ceramic from the zirconia framework. The acid will melt the zirconia framework and its strength will be reduced.
18. If the pressed ceramic needs to be removed after pressing over a zirconia framework, re-use of the zirconia framework should be limited to two times.
19. Secure more than 0.4mm thickness in all parts of the zirconia framework. If the thickness is less than 0.4mm in any part, there is a greater chance of cracks that will grow longer and wider. Secure at least more than 0.4mm thickness evenly with a rounded shoulder in frame margin area. (Refer to the illustration) Knife-edge design toward the margin end is not acceptable as the thickness will gradually be less than 0.4mm. The frame margin line should be finished very smoothly. Do not give the margin line semi-finishing.
20. Carefully grind the zirconia framework to using grinding burs/discs with minute diamond particles. Noritake Meister Points 3C-51 and SD-41 are ideal. Grinding by tools with rough particles will produce sharp scratches on the surface of the zirconia framework and eventually cause cracks to the framework. Excessive pressure during grinding may also cause cracks due to heat generation. Cooling with water is necessary to avoid heat generation during grinding.
21. From the characteristic of zirconia, even a very minute crack in the zirconia framework may be a cause for more cracks that grow bigger and wider after pressing. And then, the framework strength will greatly lower. Naturally, it does not have the strength that can be filled in the mouth. Even a crack can be found, never use the cracked framework.
22. Improper furnace parameters for the pressing cycle may lead to the problems such as an incomplete pressing, a split investment, ring, movement and absorption of the Shade Base Stain into the pressed ceramic, porosity, brittleness and value or shade changes. Every manufacturer’s press furnace is slightly different: therefore, observe the most appropriate heat-pressing schedule with your press furnace. If excessive pressing time or pressure is maintained too long even after the ceramic is pressed into the cavity, the zirconia framework may crack.
23. On occasion, when tooth reduction is inadequate, less than ideal space is available for pressable thickness over the zirconia framework. Consequently, the space created for pressable material is constricted and this in turn, creates resistance against the flow of ingot material. Due to this circumstance, the Shade Base Stain may be carried away into the flow of pressed ceramic. Special care should be taken when waxing to provide adequate space for the subsequent flow of ingot material.
24. The best thickness at the margin area of the CZR PRESS ceramic, not including the thickness of the zirconia framework, is less than 1.0mm. If it is thicker than 1.0mm, there may be deformation at the margin area after baking of the CZR Porcelain.
25. To prevent flash on the pressings, be sure to observe the above mentioned instructions during spruing and investing.
26. Noritake Plungers must be used for CZR PRESS technique. Never use other manufacturer’s plungers.
27. Be sure to use dual-cured, not light cured adhesive resin cement for a crown or inlay without a zirconia framework. This adhesive resin cement is also recommended for a crown with a zirconia framework.

**Precautions for Handling — CZR PRESS**

1. The only method for fabricating a single anterior crown and inlay or onlay without a zirconia framework is by the “Staining Technique” or “LF Layering Technique”. CZR PRESS is not indicated for bridges without a zirconia framework.
2. Use only CZR External Stain (ES) and CZR PRESS Glaze Powder for staining technique.
3. If a CZR PRESS restoration is made without a zirconia framework and then layered with normal CZR Porcelain, the crown will deform. Please use CZR PRESS LF in this case.
4. CZR Porcelain and CZR PRESS LF is precisely matched to CZR PRESS. Do not use other manufacturers’ zirconia porcelains, metal porcelains and alumina porcelains.
5. CZR PRESS cannot be used on alumina frameworks and metal frameworks.
6. Do not use other manufacturers’ Shade Base Stain.
7. Due to lower baking temperature, CZR Shade Base Porcelain must not be used for CZR PRESS. CZR PRESS Shade Base Stain must be used for CZR PRESS restorations.
8. To prevent contamination from foreign materials in the pressed ceramic, always use new wax which does not contain impurities and burns-out without leaving ash and other residues. Be sure that the framework surface is clean before wax-up.
9. Ceramic ingots cannot be re-used. Re-using ingots will cause certain restoration failure.
10. Never use hydrofluoric acid when it becomes necessary to remove the pressed ceramic from the zirconia framework. The acid will melt the zirconia framework and its strength will be reduced.
11. If the pressed ceramic needs to be removed after pressing over a zirconia framework, re-use of the zirconia framework should be limited to two times.
12. Secure more than 0.4mm thickness in all parts of the zirconia framework. If the thickness is less than 0.4mm in any part, there is a greater chance of cracks that will grow longer and wider. Secure at least more than 0.4mm thickness evenly with a rounded shoulder in frame margin area. (Refer to the illustration) Knife-edge design toward the margin end is not acceptable as the thickness will gradually be less than 0.4mm. The frame margin line should be finished very smoothly. Do not give the margin line semi-finishing.
13. Carefully grind the zirconia framework to using grinding burs/discs with minute diamond particles. Noritake Meister Points 3C-51 and SD-41 are ideal. Grinding by tools with rough particles will produce sharp scratches on the surface of the zirconia framework and eventually cause cracks to the framework. Excessive pressure during grinding may also cause cracks due to heat generation. Cooling with water is necessary to avoid heat generation during grinding.
14. From the characteristic of zirconia, even a very minute crack in the zirconia framework may be a cause for more cracks that grow bigger and wider after pressing. And then, the framework strength will greatly lower. Naturally, it does not have the strength that can be filled in the mouth. Even a crack can be found, never use the cracked framework.
15. Improper furnace parameters for the pressing cycle may lead to the problems such as an incomplete pressing, a split investment, ring, movement and absorption of the Shade Base Stain into the pressed ceramic, porosity, brittleness and value or shade changes. Every manufacturer’s press furnace is slightly different: therefore, observe the most appropriate heat-pressing schedule with your press furnace. If excessive pressing time or pressure is maintained too long even after the ceramic is pressed into the cavity, the zirconia framework may crack.
16. On occasion, when tooth reduction is inadequate, less than ideal space is available for pressable thickness over the zirconia framework. Consequently, the space created for pressable material is constricted and this in turn, creates resistance against the flow of ingot material. Due to this circumstance, the Shade Base Stain may be carried away into the flow of pressed ceramic. Special care should be taken when waxing to provide adequate space for the subsequent flow of ingot material.
17. The best thickness at the margin area of the CZR PRESS ceramic, not including the thickness of the zirconia framework, is less than 1.0mm. If it is thicker than 1.0mm, there may be deformation at the margin area after baking of the CZR Porcelain.
18. To prevent flash on the pressings, be sure to observe the above mentioned instructions during spruing and investing.
19. Noritake Plungers must be used for CZR PRESS technique. Never use other manufacturer’s plungers.
20. Be sure to use dual-cured, not light cured adhesive resin cement for a crown or inlay without a zirconia framework. This adhesive resin cement is also recommended for a crown with a zirconia framework.

**CZR PRESS**

**CZR PRESS LF**
Always use the new wax which does not contain impurities. Be sure that the framework surface is clean before wax-up.

Mixing
1. Referring to manufacturer’s instructions, prepare for press investment.
2. Then, mix the investment mechanically for 1 minute under vacuum and fill the investment in the ring without producing any bubbles.
3. The physical properties of phosphate-bonded investment change according to the temperature of the materials and equipment used in investing; therefore, maintain a constant temperature of approximately 23°C (73°F) for the powder, liquid, water and the mixing bowl.
4. Use only distilled water for dilution of “special liquid”, but do not dilute more than specified.
5. Use a separate mixing bowl for mixing phosphate- bonded investment. Never use the same mixing bowl for the gypsum-bonded investment or gypsum stone.
6. Properly dispose of the excess investment material. Always use a plaster trap.

Baking
1. After investing, leave the ring to bench-set (undisturbed) at room temperature for at least 30 min, then place it into the center of the burn-out furnace at 850°C (1562°F).
2. If the ring is left more than 12 hours after investing, soak it in water for 3.5 minutes, then place it into a preheated furnace at 850°C (1562°F).
3. Burn-out of the investment ring needs to be done at sufficient oven temperature in order to prevent insufficient wax elimination and to burn-out the remaining ammonia gases from the investment ring.
4. Do not proceed with the pressing process if cracks appear in the ring after burn-out.

Divesting
1. Divestment must be carefully carried out to avoid any breaking of the pressed ceramic.
2. Storage
3. Keep in a dry, cool place.
4. After opening the investment package, reseal the package tightly as the investment easily absorbs moisture. Never store investment in plastic bags or containers.
5. To prevent the special liquid from being frozen, never store liquid at temperatures below 0°C (32°F). Do not use frozen (and then thawed) liquid.
6. Press Investment may be stored until the expiration date if the package has never been opened. Always use before the expiration date. Once the package has been opened, use the investment immediately.

Precautions for Handling – CZR PRESS LF
Porcelain
1. The only restorations that can be made by CZR PRESS ingot and LF Porcelain without using a zirconia framework are an anterior single crown, a porcelain laminate veneer, an inlay and an onlay. Do not make a bridge without a zirconia framework.
2. Do not use CZR PRESS LF for the clinical cases where the thickness of the pressed ceramic cannot be more than 0.8mm, cross bite and restoration of the tooth. The restoration receives unexpectedly strong pressure.
3. In order to avoid chipping, the best thickness at the margin area of the framework should be more than 1.5mm.
4. Be sure to read this technical instructions from wax-up to divesting and Sprue-cutting and follow the instructions.
5. As to the investment powder, liquid ratio, refer to the baking schedule of manufacturer’s instructions.
6. For inserting CZR PRESS ingot, Noritake Disposable Plunger is recommended as it has a perfect matching CTE.
7. Carefully grind the pressed ceramic not to produce cracks and chipping.
8. Do not mix with other porcelain, including other Noritake Porcelain or other manufacturer’s porcelain.
9. When without a zirconia framework, CZR Enamel, Translucent and Luster Porcelain cannot be used on the CZR pressed ceramic. Use CZR PRESS LF Porcelain only.
10. Use only Noritake LF Liquid or distilled water.
11. CZR PRESS LF is baked properly when the surface has a slight luster after baking. Please adjust your furnace to achieve this result.
12. CZR PRESS LF is a low fusing porcelain. In case any fiber such as tissue paper remains after baking, it should be removed.
13. For porcelain separation, please use Noritake Magic Separator that can be used for low fusing porcelain.
14. Observe the recommended cool time. Do not cool CZR PRESS LF too quickly.
15. Do not use metal baking pans. The metal may stain the inside of the framework. The pans must be clean. Leftover porcelain may fuse to the inside of the framework.
16. Keep all liquids in a dry cool place, avoiding direct sunlight.
17. Be sure to use adhesive resin cement for bonding.

Resin Cement Examples
Product Name | Manufacturer
--- | ---
Panavia F2.0 | Kuraray
Panavia 21 | Kuraray
Relux Uncem | 3M

Stain
1. Be sure to use CZR PRESS LF Internal Stain (IS) or External Stain (ES) for staining and glazing powder. Other stains cannot be used.
2. There is a risk of blackening when using the stain liquid of other manufacturers. It is very important to use IS Liquid or ES Liquid exclusively.
3. CZR PRESS LF IS is made exclusively for internal staining.
4. IS Liquid should not be mixed with water, use as is without diluting.
5. After mixing Internal Stain with IS Liquid on the palette, avoid letting it sit for a long time and avoid making repeated additions to the original mixture. Using stain from which too much moisture has evaporated will result in bubbles.
6. If different colored stains are applied over on the same area without baking between applications, they may blend unpredictably. To avoid this, divide the staining process into two parts and bake between applications.
7. IS Liquid contains ingredients that dissolve some plastics. Please handle with extreme caution in the presence of plastic materials.

Notes on Safety — CZR
1. When grinding porcelain use an approved dust mask and a vacuum air filter to protect the lungs from breathing dust.
2. When grinding porcelain, wear safety glasses.
3. It is non-edible. Keep it out of the reach of children.
4. Avoid eye contact with all Liquids. In the event of eye contact, immediately rinse with a copious amount of water and consult a physician.
5. Do not touch items heated by the furnace with your bare hands.
6. Keep IS Liquid and ES Liquid away from flames and high temperatures. They are flammable.
7. This porcelain is for dental use only. Do not use for other purposes.
8. For use only by dentists and dental technicians.
9. All Noritake products mentioned in this manual except KATANA Noritake Magic Set, Forming Liquid, Noritake Meister Liquid and Noritake Meister Point are part of the CZR system and are covered by its registered trademark.
10. Work in a well-ventilated room during firing porcelain.
11. LF Porcelain contains Silica. Avoid inhaling the dust. Use a dust collector and an approved dust mask. Over exposures may cause delayed lung injury.
12. Avoid exposure to eyes. Wear the goggles for eye protection during cutting or polishing works. In case of contact with eyes, flush eyes with copious amounts of water and consult an eye-doctor.
13. Avoid eye contact with Noritake LF Liquids. In case of contact with eyes, flush eyes with copious amounts of water and consult an eye-doctor.
14. Do not touch items heated by the furnace with your bare hand.
15. Noritake IS Liquid away from flames and high temperatures. They are flammable.
16. Some people are sensitive to skin contact. Wear rubber gloves to protect your skin.
18. This material is for dental application only. Do not use for any purpose not specified in the instruction manual.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panavia F2.0</td>
<td>Kuraray</td>
</tr>
<tr>
<td>Panavia 21</td>
<td>Kuraray</td>
</tr>
<tr>
<td>Relux Uncem</td>
<td>3M</td>
</tr>
</tbody>
</table>

CONSULT INSTRUCTIONS FOR USE

Symbol: Manufacturing | Symbol: Batch Code
---|---
Manufacturing | Batch Code

USE BY: DATE

CATALOGUE NUMBER

AUTHORISED REPRESENTATIVE IN THE EUROPEAN COMMUNITY

- CONTRAINDICATIONS
  - If the patient is hypersensitive to Dental Porcelain or any of the other components in this product, use should not be considered.
- If it should be used under the strict supervision of the patient’s dentist.

- EU AUTHORIZED REPRESENTATIVE
  - Name: Kuraray Europe GmbH
  - Address: Philippseestrasse 32, 63715 Hanau, Germany